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A SURVEY OF PHYSICAL TRAINING FACILITIES AND PROGRAMS
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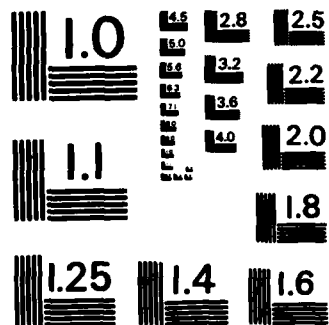
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**E. J. MARCINIK
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**A SURVEY OF PHYSICAL TRAINING FACILITIES
AND PROGRAMS ONBOARD U.S. NAVY VESSELS**

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SUMMARY

Physical training related information was collected on 20 U.S. Navy vessels homeported in San Diego and Long Beach, CA by a research team representing the Naval Health Research Center. Surveyed data included vessel classification, exercise equipment type, utilization rate and environmental condition of training sites, and the current status of command sponsored fitness programs.

Findings showed 15% of surveyed vessels were equipped with aerobic type training devices (i.e. stationary bicycles and treadmills). Multi-station weight equipment was operable on 70% of ships. 15% of ships had no designated exercise space. Physical training facilities tended to be utilized to a greater degree underway than while in port and environmental conditions were excellent onboard 70% of ships. While no commands offered either aerobic or strength conditioning regimes for the entire crew, 20% of the vessels conducted aerobic programs for select groups (i.e., obese individuals).

It can be concluded that while the majority of vessels are fairly well equipped to physically condition crewmembers, training sites are for the most part under utilized. Findings reveal a need to design effective exercise programs which fully utilize existing recreational resources and address the personal fitness needs of the entire crew. Circuit weight training programs utilizing multi-station weight equipment, presently available on the majority of Navy ships, seems an appropriate means of physically conditioning shipboard personnel. It leads to improved muscular strength and muscular endurance needed for shipboard work while maintaining aerobic fitness in the absence of running.

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INTRODUCTION

The Navy has always emphasized the importance of maintaining physical fitness onboard ship. Implementation of effective afloat physical training programs, however, have for the most part been unsuccessful. To work efficiently, it appears that fitness programs must be tailored within the space and time restrictions imposed by afloat environments. For improved operational readiness, programs should also be designed to develop fitness abilities necessary to perform Navy jobs.

Work to date has identified a need for upper torso muscular strength for performance of routine shipboard work chores (Robertson, 1983). A pilot circuit weight training (CWT) program (running excluded) has been found to enhance muscular strength and muscular endurance while maintaining aerobic fitness of Navy men and women (Marcinik, et. al., 1985). Programs of this sort seem promising for installation on ship platforms where the opportunity for running is limited.

As part of the Naval Surface Force U.S. Pacific Fleet (NAVSURFPAC) recreation program, weight equipment is currently being procured for surface units. The only exercise protocols provided are the manufacturers brochure that are, in some instances, inadequate in providing protocols and instructions for shipboard utilization. It was requested therefore that the Naval Health Research Center provide assistance in the development of exercise protocols for NAVSURFPAC vessels (COMNAVSURFPAC letter, 1982). The approach taken was to evaluate physical training facilities and programs currently operational onboard a wide variety of ship classes. This information could then be used to design physical training regimes that utilize existing shipboard resources most effectively.

MATERIALS AND METHODS

Shipboard Survey Physical training related data was collected on 20 U.S. Navy vessels (14 classifications) homeported in San Diego and Long Beach, CA by a research team representing the Naval Health Research Center. Surveyed data included vessel classification, type of operable exercise equipment, utilization rate and environmental conditions of physical training sites, and the current status of command sponsored fitness programs for both select populations (i.e., obese personnel) and the entire crew. A list of surveyed ships is presented in Table 1.

Table 1 - List of US Navy Vessels Surveyed

<u>Numbers</u>	<u>Classification</u>
(1)	Guided Missile Frigate (FFG), "OLIVER HAZARD PERRY" class
(1)	Guided Missile Frigate (FFG), "BROOKE" class
(1)	Frigate (FF), "KNOX" class
(1)	Guided Missile Destroyer (DDG), "CHARLES F. ADAMS" class
(2)	Destroyers (DD), "SPRUANCE" class

- (2) Guided Missile Cruisers (CG), "LEAHY" class
- (2) Guided Missile Cruisers (CG), "BELKNAP" class
- (2) Tank Landing Ships (LST), "NEWPORT" class
- (2) Amphibious Cargo Ships (LKA), "CHARLESTON" class
- (2) Amphibious Transport Dock Ships (LPD), "AUSTIN" class
- (1) Amphibious Assault Ship (LPH), "IWO JIMA" class
- (1) Amphibious Assault Ship (LHA), "TARAWA" class
- (1) Destroyer Tender (AD), "SAMUEL GOMPERS" class
- (1) Destroyer Tender (AD), "DIXIE" class

RESULTS

Results of the equipment survey are summarized in Table 2. Findings show relatively few ships possessed aerobic type training devices (e.g., 10% of vessels maintained stationary bicycles and 5% operated treadmills. Weight training devices were found to be more prevalent onboard ship. Single station weight machines were present on 55% of surveyed vessels while 70% had multi-station equipment.

Physical training site information is presented in Table 3. In general, physical training facilities were found to be utilized to a greater degree underway than in port. Excellent environmental conditions for training were found on the majority of ships. A total of 15% of surveyed ships offered no area for exercise.

Table 4 lists the status of fleet exercise programs. No ship commands sponsored aerobic or strength conditioning programs for the entire crew. However, aerobic programs for select populations (e.g. overweight personnel) were found on 20% of the ships.

DISCUSSION

The shipboard survey enabled us to assess the present status of fitness programs and resources in the fleet. In general, findings indicate organized shipboard fitness programs have not been well established. For instance, no ship commands sponsored aerobic programs for the entire crew. When present, (20% of surveyed ships) aerobic programs were undertaken by the following select groups: 1) overweight personnel assigned to mandatory weight control programs, 2) running teams made up of a cadre of running enthusiasts, and 3) individuals taking part in personal workouts. The scarcity of aerobic based programs in the fleet attests to several inherent shipboard limitations. Limited space availability precludes running on many of the smaller classes of ships. Where conditions for running exist, obstacles such as narrow passageways and shipboard fixtures (i.e. opening doors and hatches) may present real safety hazards. Adverse weather conditions may also prevent or at least discourage participation in regular aerobic workouts while underway. Factors such as these lower the effectiveness and reduce the likelihood of establishing programs for cardiovascular health.

Alternative means of developing aerobic fitness, such as provided by specialized exercise devices, were also found in short supply in the fleet. Stationary bicycles and treadmills were present on only 15% of surveyed ships. In lieu of jogging, these devices serve as effective training aids in restricted space environments. They appear to be limited in design only to the number of personnel who can utilize them at any given time.

Likewise, organized strength conditioning programs were found to be non-existent in the fleet. Although 85% of vessels operated weight training rooms, these spaces were used almost exclusively by a select group of individuals for body building or power lifting workouts. Essentially, exercise spaces could be divided into two main categories: 1) built-in exercise rooms such as those found onboard Spruance class DD's and 2) re-designated spaces converted into functional exercise rooms (e.g. converted storage areas found onboard Tarawa class LHA and Dixon class AD). In general, exercise spaces were found to be under utilized. The majority of exercise spaces had restricted hours of operation which limited the number of personnel utilizing them on a regular basis.

It should be noted, the majority of ships were well furnished with a variety of free weights and single or multi-station weight equipment. Because of the lack of adequate supervision, however, exercise equipment was often improperly used. While injury data was not within the scope of this survey, such circumstances seem to increase the chance of both personnel injury and equipment damage.

Examination of Table 3 shows utilization of physical training sites to be higher underway than in port. Access to more elaborate shore based recreational facilities may have largely contributed to this finding. Only 3 of the 20 ships surveyed had no designated exercise space. These ships were the Adams class DDG, and both Leahy class CG's. Limited space availability seems to almost exclude the implementation of equipment dependent fitness programs on these ships.

Finally, it should be mentioned that 70% of ships provided excellent environmental conditions for physical conditioning. Only ships utilizing re-designated exercise spaces (viz. the Austin class LPD and Tarawa class LHA), did not provide adequate ventilation and were poorly lighted.

CONCLUSION

It can be concluded from this investigation that favorable conditions currently exist in terms of availability of training facilities and exercise equipment for maintenance of fitness afloat. The absence of command sponsored fitness programs, however, has placed the responsibility of maintaining fitness on the individual crewmember. It appears this situation has lead to an inefficient utilization of present recreational resources. Findings reveal a need to design effective conditioning formats which fully utilize existing resources and address the personal fitness needs of

the entire crew. Based on findings of this survey and prior physical training related studies (Marcinik, 1984; Marcinik, et. al., 1985), it is recommended that a circuit weight training approach to conditioning be utilized for shipboard personnel. Circuit weight training involves brief episodes of weight lifting compatible with tight ship work schedules. Circuit weight training also utilizes multi-station equipment functional in close quarters and presently in use on a wide variety of Navy vessels.

References

1. Robertson, D. Relationship of dynamic strength, static strength, and body weight to mental and muscular tasks. Proceedings of the 24th DRG Seminar on The Human as a Limiting Element in Military Systems. Toronto, Canada, 2-4 May 1983.
2. Marcinik, E.J., J. A. Hodgdon, J.J. O'Brien and K. Mittleman. A Comparison of the Effects of Circuit Weight Training for Navy Men and Women. NHRC Report No. 85-13, 1985.
3. COMNAVSURFPACE Letter FF4-5:WB 6000 n13/1018 of 19 NOV 1982 (NOTAL).
4. Marcinik, E.J. SPARTEN: A Total Body Fitness Program for Health and Physical Readiness. NHRC Report 84-38.

Table 2 Exercise Equipment Present on US Navy Vessels

Ship	Class	Stationary Bicycle	Treadmill	Free Weights	Single Station Weight Machines	Multi Station Weight Machines	No Weight Equipment	Sports Equipment
FFG	Oliver Hazard Perry	*				*		*
FFG	Brooks			*	*			*
FF	Knox						*	*
DDG	Adams						*	*
DD	Spruance	*		*	*	*		*
DD	Spruance			*	*	*		*
CG	Leahy			*				*
CG	Leahy						*	*
CG	Belknap					*		*
CG	Belknap			*		*		*
LST	Newport			*	*	*		*
LST	Newport			*	*	*		*
LKA	Charleston			*	*	*		*
LKA	Charleston			*	*	*		*
LPD	Austin					*		*
LPD	Austin				*	*		*
LPH	Iwo Jima		*			*		*
LHA	Tarawa			*	*	*		*
AD	Gompers			*	*	*		*
AD	Dixon				*			*
% Total		10%	5%	55%	55%	70%	15%	100%

* Indicates presence of exercise equipment onboard ship

Table 3 Physical Training Site Utilization and Environmental Conditions

Ship Class	Daily Utilization In Port	Daily Utilization Underway	Excellent Environmental Conditions	No Designated Exercise Space
FFG Oliver Hazard Perry	*	*	*	
FFG Brooks	*	*	*	
FF Knox		*		
DDG Adams				*
DD Spruance	*	*	*	
DD Spruance	*	*	*	
CG Leahy				*
CG Leahy				*
CG Belknap	*	*	*	
CG Belknap		*	*	
LST Newport		*	*	
LST Newport	*	*	*	
LKA Charleston				
LKA Charleston	*	*	*	
LPD Austin	*	*	*	
LPD Austin		*	*	
LPH Iwo Jima	*	*	*	
LHA Tarawa		*		
AD Gompers	*	*	*	
AD Dixon		*	*	
% Total	50%	80%	70%	15%

* Indicates utilization or presence of condition

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) In order to design physical training programs that best utilize existing shipboard recreation resources, a survey of facilities and programs currently operational in the fleet was undertaken. Findings showed that while relatively few ships operated aerobic type conditioning devices (15% of total), weight training equipment use was fairly high (70% of total). An important finding was the total absence of command sponsored aerobic or strengthening programs for the entire crew. Aerobic programs for select		

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